



Children on Bicycles – Mobility Education

Pupil surveys continue to show that children and adolescents want to use their bikes; but parental safety concerns and inadequate traffic situations often put a stop to these wishes. Promoting bicycle use among children and adolescents is, however, vital in shaping their travel behaviour later in life; integrating these efforts into road safety education serves multiple purposes: it promotes the independent mobility of children and adolescents; it creates awareness for an environmentally friendly transport mode; it triggers a respectful and safe behaviour in traffic; and it addresses the effects transport has on individuals and the environment. Another major purpose is the prevention of accidents; it is relevant even at later stages in life, since traffic death rates are highest among young people aged 18 to 23.

Specific mobility requirements of children

The exposure rate among children (children outside the home in correlation to all children and adolescents) is about 92%, and is higher than among adults (84%). Just like working adults, children and adolescents make 3,3 trips per day on average. They travel shorter distances than adults, but the average overall trip length is still 18 km per day; exposure levels continuously increase between the ages 3 and 18 from 50 to 70 minutes per day. In the course of the day, exposure peaks when school starts between seven and eight a.m., and from eleven a.m. until three to four p.m. As exposure peaks do not coincide with those of commuters, children and adolescents are often not accounted for in traffic surveys. In

terms of choice of transport mode, car passenger trips are most prevalent, but bicycle use increases rapidly with age.

As they grow up, children and adolescents continuously expand their spheres of action: they cycle to school, to sporting venues, and to the city centre. Their motor skills, spatial ability and situation awareness are developed further as they become older, making cycling the ideal means of transport that allows them to increase the number of trips they make independently. It is important

*Cover image: Small bicycle stands for children's bikes (Cologne).
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to bear in mind the frequent mistakes made involving the misconceptions about the motor skills development of children: While the understanding of danger develops already at age 6, children do not show active preventive behaviour until they are 9 to 10 years old. When crossing the street, primary school children have been found, for example, to stop at the kerb for orientation regardless whether their sight was obstructed or not; they did not stop at the sight line for orientation. Furthermore, children have difficulties cycling in a straight line when looking behind; often they swerve because their bike follows their gaze. They slightly lose balance when signalling to turn. When riding with friends, children make a lot more mistakes; when accompanied by adults they make far fewer mistakes.

These findings corroborate the importance of road safety education for children and adolescents. The bicycle may be the only means for them to get around quickly within an adequate range. Choosing cycling for everyday travel when young can impact the choice of transport mode at later stages in life.

Accident statistics

In Germany the number of child casualties in road accidents in 2010 was 28,629, 7.2% fewer than in 2009. But the number of children killed in road accidents increased by 16% from 90 in 2009 to 104 in 2010. According to the Federal Statistical Office (Statistisches Bundesamt, Destatis) 35% of child casualties were car passengers (60% ages 0-6; 37% ages 6-10, up to 25%



Children cycling in Freiburg in a traffic calmed zone.
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above age 10). The accident development changes for children aged 10 to 15, where 46% of casualties were cyclists. From the children killed in road accidents in 2010 almost 50% were car passengers; 19% were cyclists. The figures differ according to gender: boys are involved in accidents much more often and the relative risk for boys of being involved in a cycling accident is above average (66%). The accident rate is highest on weekday afternoons, which shows that most problems occur on leisure trips rather than on the everyday trip to school. The number of bicycle accidents involving children also varies depending on the season: the number increases sharply during the warm weather months in the school year; it is much lower during the holidays and goes down to a minimum low during the cold weather months.

Road behaviour and causes of accidents involving cycling children

71% of the bicycle accidents involving children are due to the incorrect road behaviour of children. This again is due to their developmental stage. Accidents are mainly caused by incorrect road use and mistakes made when turning left or right, turning around, entering traffic and starting after coming to a halt. These mistakes are often associated with beginners; children will stop making them as they acquire more riding experience rather than by merely learning the rules. The mobility of children also depends, in part, on the urban structure: if quality cycle-route networks and child-friendly routes to school are provided, parents will also encourage their children to independent mobility.

Cycling promotion for children and adolescents as part of an integrated mobility education

Designing for independent mobility

The active and independent mobility of children and adolescents requires, above all, space, depending on their height, body coordination skills, and their perception of traffic speed and level of traffic experience. Adequate space is needed not only at playgrounds but also in the road environment so that children and adolescents can make their own independent experiences. They are, however, not the only target group placing requirements on public space, and whose wants and needs must be addressed. Given the life cycle of road infrastructure, public space should thus be accessible for all. The Ger-

Sources

Basic Facts Children Accidents (2010) (German)
(<http://www.kindersicherheit.de/html/basisdaten2010.html>)

Leipziger Kinderbüro e.V. (<http://www.sozialestadt.de/praxisdatenbank/suche/ausgabe.php?id=211>)
(<http://www.leipziger-kinderbuero.de/>)

Federal Health Monitoring (2010): Traffic Accidents
(http://www.gbe-bund.de/gbe10/abrechnung.prc_abr_test_logon?p_uid=gastg&p_aid=87896619&p_sprache=E&p_knoten=TR5800)

Statistisches Bundesamt (2011): Traffic crashes: Children Crashes in Traffic, Wiesbaden (German)



A training bike for children teaches them how to keep their balance and makes learning how to cycle much easier than with training wheels.
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man Guidelines for Urban Street Design (Richtlinien für die Anlage von Stadtstraßen, RAS 06) establish high standards for pavement widths, cycle routes, crossing points, and traffic speed reduction; they offer a variety of solutions for typical street layouts. The report from the German Road and Transport Research Association FGSV titled ‘Advice on how to integrate the concerns of children and adolescents into traffic planning’ also provides advice on planning, for example the reduction of motor-vehicle speed; the reduction of space requirements of stationary traffic within the street environment; and the connection of playing facilities.

Transport planning for children and adolescents

The participation of children in decision-making processes at municipal level is stipulated by several treaties and instruments: the UN Convention on the Rights of the Child, the Agenda 21 of the United Nations, the European Charter on the Participation of Young People in Municipal and Regional Life; in Germany it is regulated by the Child and Youth Welfare Act (Kinder- und Jugendhilfegesetz) as part of the German Social Security Code (SGB). The act provides a legal basis for the Länder to specify, in the Municipal Codes, the way in which children and adolescents participate in planning processes.

The city of Leipzig established the Leipziger Kinderbüro e.V. (‘Children’s Office’) as part of the urban development programme Soziale Stadt (‘Socially Integrative City’) focusing on specific boroughs in the city. The children’s office addresses the issue of participation of children in urban planning within their neighbourhood. Through various methods, children are asked about their wishes and the results are presented to the relevant planners. The office facilitated and realised a number of projects such as developing traffic lights, designing public playgrounds and special signs showing places

that are important to children, as well as creating a map showing dangerous traffic situations, and designing a cycle and skateboard route network.

In 2001 the city of Osnabrück launched the traffic concept ‘Haste’ (named after one of its boroughs), planning for a change in road infrastructure while integrating the systematic participation of children. For the first time children were considered in all planning phases. A total of about 80 children aged 7 to 14, almost 20% of the children of that age group living in the neighbourhood participated. Questionnaires and photo safaris, for example, were used to analyse the traffic conditions within the borough. This analysis showed that many of the children mostly used the busy main road as the shortest route to many of their destinations (school, sports activities, home). Thus, it was decided to design a parallel road as a main road for children connecting the same destinations. On this child-friendly main road important features include: recreational facilities on the side of the road; safe crossings; lighting to increase security; various rest and balancing facilities; colourfully painted garages; and many-coloured signs designed by children; as well as ‘companions’ (‘Weggefährten’). The road also includes various speed control measures: zebra crossings and road narrowing in crossing areas; expanded zones where speed limit is 30 km/h (18 mph); large child-like figures on the side of the road aimed at making drivers aware of the children. In addition, a safety strip is provided at bus stops in order to avoid conflicts between cyclists and pedestrians. For the city of Osnabrück these measures form a crucial part of transport schemes implemented in neighbourhoods and residential areas. The measures increased the acceptance and quality of the changes in road infrastructure, and a smooth cooperation and project structure helped limit the additional costs for the implementing departments.

Other projects focus on a specific group of adolescents, such as a youth exchange project between the German city of Bremen and the British city of Darlington. As part of the exchange, the young female participants discuss what impact the planned environment has on the choice of transport mode among girls. The outcome of the exchange project and the discussions among the participants were made into the film titled ‘Beauty and the BIKE’.

Documentary ‘Beauty and the BIKE (2009)
(<http://www.bikebeauty.org>)

‘It’s cool to bike to school’ in Bünde
(edoc.difu.de/edoc.php?id=HJWU42KD) (pdf) and
(<http://www.nrvp.de/praxisbeispiele/anzeige.phtml?id=2098>)
(German)

UN Convention on the Rights of the Child (1990)
(<http://www.unicef.org/crc/>)

European Charter on the Participation of Young People in Municipal and Regional Life (2003)
(http://www.coe.int/t/dg4/youth/Source/Coe_youth/Participation/COE_charter_participation_en.pdf)

Mobility education in schools

Schools can approach the complex topic of mobility in a variety of ways. In teaching children mobility competencies, schools should focus on comprehensive cycling skills that can be practised and used in real-life situations. In the German Land Hamburg children use the so-called 'Fahrrad-Tagebuch' ('Bicycle Diary') to describe the dangerous situations and risks they encounter on their route to school. This allows schools and police trainers to understand the specific situation of children in cycling traffic, which is central to mobility education. Depending on the grade of the children, schools offer educational neighbourhood tours, cycle training on the route to school, and cycle training courses to teach children the basic skills they need to get to school safely (grades 1-6); they offer spaces to discuss the topic of mobility and the social and environmental impact of our current mobility behaviour (grades 7-10); as well as spaces to address more complex topics, such as sustainable mobility (grades 11-13). In order to address mobility and all its dimensions, interdisciplinary projects can also be used.

By involving children in the planning process, where feasible, they can be encouraged to take active part in matters of civil society; but also the traffic situation in



The secondary school pupils in Bünde discuss dangerous traffic situations on the way to school. Infrastructure improvements at the same school as a result.
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front of schools can be improved significantly. As part of the project 'It's cool to bike to school' in the city of Bünde, a pupil survey was conducted to take stock of the hazard spots that they encounter along their routes. On the basis of this mobility survey, it was possible to implement various proposals for the optimisation of road infrastructure in cooperation with the police, municipality, school administration and teachers. Owing to the large number of bicycles around the school (accounting for 50% of pupils in the summer), the road on which the parking facility is located was transformed into a bicycle street with limited motor-vehicle traffic. These changes were communicated to motorists by pupils and police officers, using printed materials. Furthermore, additional zebra crossings were created, along with a connecting path for cyclists. The total budget for the changes in road infrastructure was EUR 39,000.

Promoting the independent mobility of children – travelling on foot, by bicycle or using public transport – also often depends on the teachers and parents' own traffic behaviour. They can be role models for children; and they can help reduce private motorised traffic in front of schools. Thus, many projects in schools involve parents and teachers in their activities.

Conclusion

Accident statistics show that the reasons for many accidents involving children are developmental. By enabling children and adolescents to actively explore and shape the environment or neighbourhood they live in, their specific mobility requirements can be considered by planners, and thus be met. The example of the city of Leipzig shows that including children into the planning process can be highly beneficial to the design of street environments. Schools also bear high responsibility as they provide children with the mobility competencies they require for their independent mobility. Road safety training should be delivered in real-life situations enabling the children to draw on experiences in the learning process. Simultaneously, schools should take an interdisciplinary approach to mobility education and deal with environmental aspects of mode choices as well as with the impact transport has on individuals and the global environment.



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